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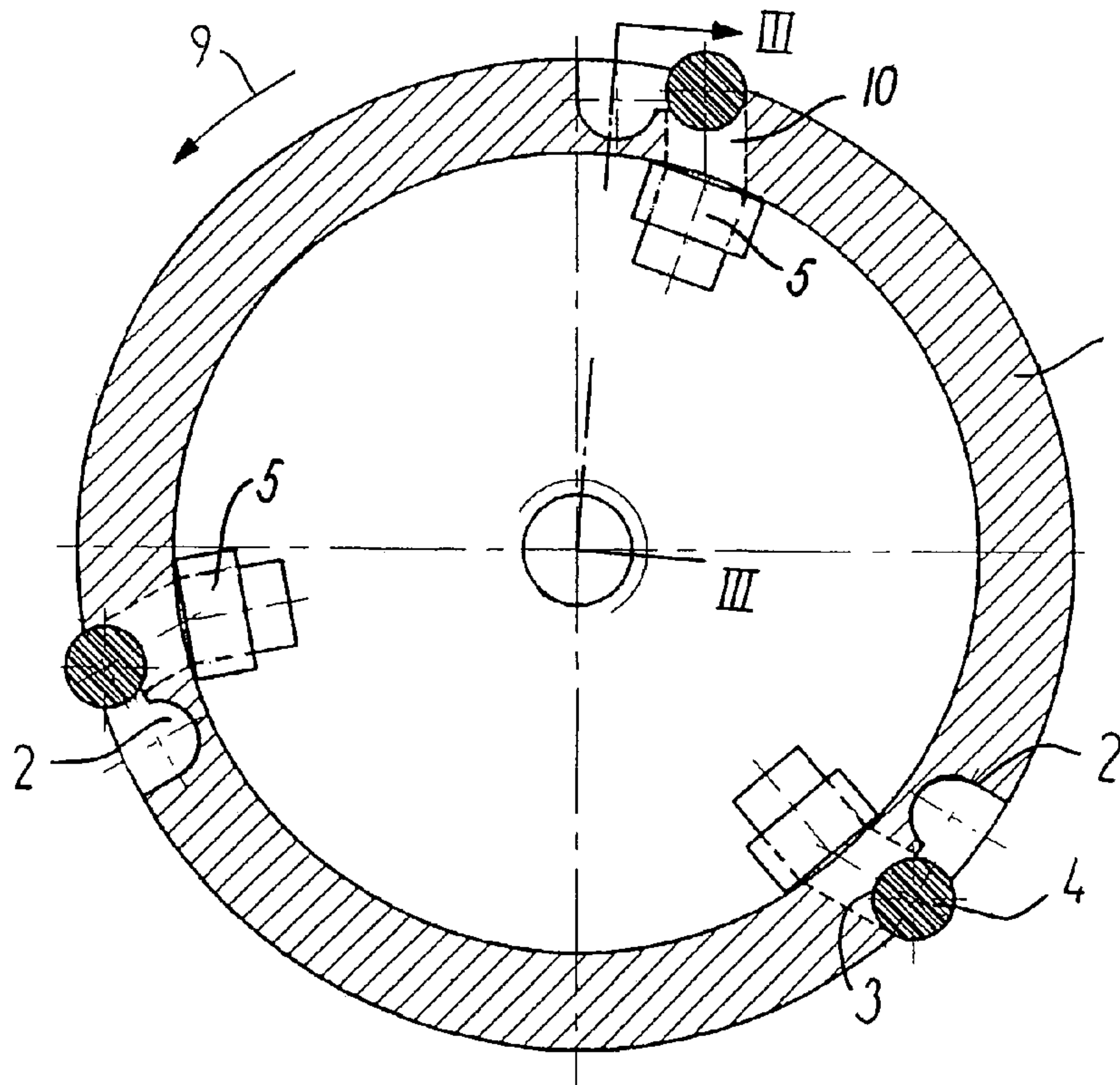
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(57) **Abrégé/Abstract:**

When, according to the invention, a coupling is provided between a driving shaft (1) and a hub (6), said shaft (1) being configured with several sets of grooves (2, 3) in which an elastic cord (4) may extend, the cord (4) in the deep track (2) will have a slight or poor engagement with the hub (6), while the cord in the low track (3) will be pressed out into firm engagement with the hub (6).

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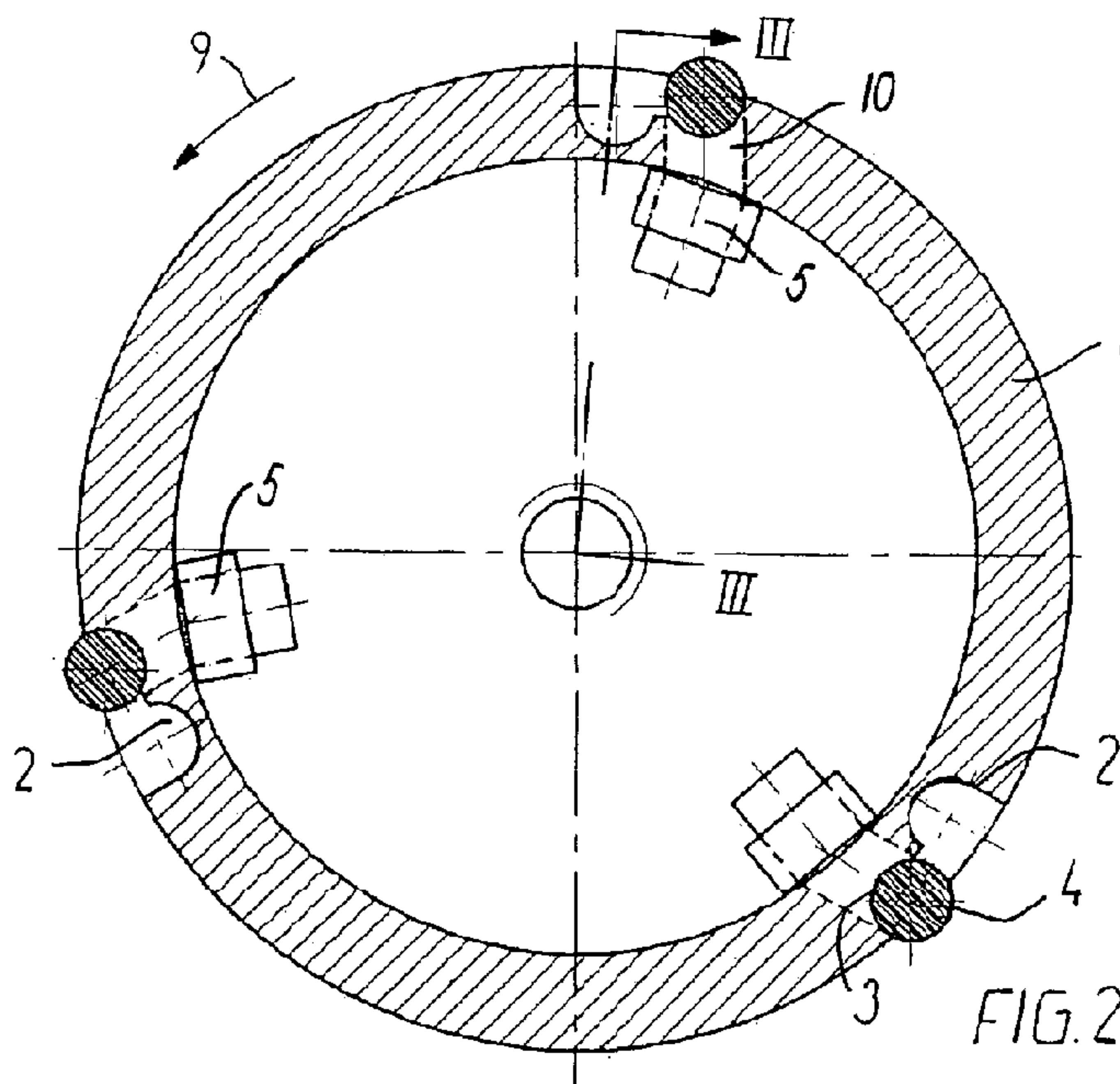
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(57) Abstract: When, according to the invention, a coupling is provided between a driving shaft (1) and a hub (6), said shaft (1) being configured with several sets of grooves (2, 3) in which an elastic cord (4) may extend, the cord (4) in the deep track (2) will have a slight or poor engagement with the hub (6), while the cord in the low track (3) will be pressed out into firm engagement with the hub (6).

A COUPLING

(45)

The prior art

5 The invention relates to a coupling comprising a driving shaft or spindle which is capable of engaging a surrounding driven hub, said shaft or spindle being configured with three or more longitudinal sets of grooves or tracks in which a cord may extend, said grooves or tracks having two depths so that the cord may extend either in the deep track or in the low track, whereby there is no or slightly driving or firmly driving contact, respectively, with the hub,

Couplings of this type are known in many different embodiments, depending on operating conditions and on the purposes which the coupling, in general, is to serve.

Where, e.g., a grinding tool is involved, it must be capable of centering the tool precisely, just as the coupling must be easy to operate with a view to replacement of the tool, either because it is worn, or where another tool is needed.

Normally, such couplings are constructed as a spindle having threads, it being possible to clamp the tool to the shaft by means of a flange and a bolt.

However, this requires partly a tool, partly a very precise machining of the surfaces or the fit between shaft and hub. The latter makes it expensive to manufacture the coupling.

Where a one-way coupling is needed, a mechanical toothed arrangement with pawls or the like will normally have to be incorporated. Such a me-

chanical device, too, is relatively expensive to manufacture, and it also requires maintenance.

5 Another coupling type of the type defined in the invention is known from DE 1750227.

10 This coupling comprises a driving shaft which is capable of making no, slightly driving or firmly driving contact, respectively, with a surrounding, driven hub, and a plurality of loose bodies, which extend in grooves in the exterior of the driving shaft, will be able to engage the driven shaft by means of the centrifugal force.

15 This coupling is vitiated by certain defects and drawbacks, which are primarily caused by the fact that the coupling is imprecise, as it may tend to be engaged and/or disengaged non-uniformly, which will have as a result that the centering is imprecise because of the uneven coupling engagement.

To this should be added the relatively large number of elements comprised by the coupling, which adds to the manufacturing costs.

20

The object of the invention

25 It is the object of the invention to provide a coupling which is simple and reliable in operation, precise in its coupling-together of the parts and their positioning, and thereby centering of the engaging parts, noiseless and moreover maintenance-free as well as easy to disassemble without the use of tools.

30 This is achieved according to the invention by means of a coupling, wherein the cord is made of an elastic material.

5 A coupling function is achieved in this manner, as the elastic cord in the deep track involves no or only slightly driving contact with the surrounding hub. Rotation of the shaft will cause the cord to be transferred from the deep track to the low track, thereby applying an outwardly directed force to the hub, so that the parts are coupled together firmly. This results in partly a uniform transfer of torque, partly an absolute centering of the parts, where, normally, three sets of tracks are used.

10 It is ensured hereby that by the movement against the normal direction of rotation in operation the cord will be released from the engagement and thereby ensure that the driven hub and the tool may pulled off the shaft or spindle easily and without difficulty. This takes place merely by stopping the rotation and, by means of a slight backwards movement of the hub, will re-
15 lease this from the engagement with the driving shaft.

A one-way coupling is established hereby, which simultaneously ensures a very precise centering of the parts, if the sets of the grooves extend equi-
20 distantly on the shaft. In some cases, this will mean that a larger diameter requires more sets of tracks than three sets.

No noticeable wear of the parts will occur in operation, and, therefore, the coupling will be just about maintenance-free.

25 When the bottoms of the grooves are configured to be curved and the cord is configured with a circular cross-sectional shape, there will be an even impact on the cord during its pressing-out and thereby engagement.

30 When the cords are mounted such that they are passed between bores or openings through the shaft or spindle at the ends of the tracks, the cords may be mounted and secured in a state in which there is a suitable

tightening because of the elasticity of the cords.

Finally, it is expedient to secure the cords by means of a bead, a clamp or
or a similar attachment device internally in the shaft or spindle at the ends
5 of the cords, for example, on the inner side of the opening in the shaft or
spindle.

The drawing

10 An example of an embodiment of the invention will be described more fully
below with reference to the drawing, in which

fig. 1 shows a sectional view of a shaft or spindle with three cords,
which are disposed in the deep tracks,

15

fig. 2 shows a sectional view where the cords extend in the low
tracks,

fig. 3 shows a longitudinal sectional view of the shaft or spindle,
20 seen in the direction III-III in fig. 2,

fig. 4 shows a working tool during mounting and thereby in a disen-
gaged state, and

25 fig. 5 shows the tool coupled together with the shaft or spindle.

Description of an exemplary embodiment

The coupling according to the invention comprises a spindle or shaft 1,
30 which is shown in cross-section in figs. 1 and 2.

or shaft 1 by a tool 7.

It should be observed that the hub 6 is formed by a hollow body of rotation without any requirements whatsoever with respect to the configuration, as
5 the bore merely has to have a diameter which is slightly larger than the diameter of the spindle or shaft 1.

Therefore, the coupling can work with an arbitrarily long hub, provided that this is configured with an inner bore.

10

The description will therefore comprise the spindle or shaft 1, as shown in figs. 1 – 3.

In the following, the designation of the spindle or shaft will be spindle alone,
15 which is connected with a rotating rotor (not shown) in a generally known manner. In the example shown, the spindle 1 is configured as a length of pipe. Three sets of grooves 2, 3 are arranged on the surface, offset 120 degrees. This ensures a completely precise alignment of the hub, as will be explained later.

20

As shown in figs. 1 and 2, each set of grooves consists of two grooves 2 and 3, the one groove 2 being deeper than the other one 3.

The deep groove 2 is disposed in front of the lower groove 3 seen in the
25 direction of rotation 9.

These grooves extend longitudinally of the spindle 1, as shown in fig. 3.

The cross-sectional shape is as shown with round bottoms. The purpose of
30 these grooves 2, 3 is to provide a seat for a cord 4, which is preferably made of flexible plastics, such as silicone or a similar material, corre-

sponding to what is used for the manufacture of O-rings or the like.

The diameter of the cord 4 may e.g. be 8 mm, and the length is adapted to the length of the spindle 1.

5

To secure the cord 4, a bore 10 is provided at both ends of the grooves 2, 3, so that the cord 4 may extend between the bores 10, as indicated in fig. 3.

10 The cord 4 is secured by means of clamping rings 5 or the like.

The function will now be explained with reference to figs. 4 and 5.

15 In fig. 4, the spindle 1 and the hub 6 have been joined, and the cord 4 is in the front deep groove 2. With the cord 4 in this groove 2, there is no contact between the parts 1 and 6, and the coupling is thereby in its disengaged position.

20 Therefore, the hub 6 may be rotated freely in both its directions of rotation, as indicated by arrows 8. Hereby, the hub with the tool 7 may freely be pulled off and be applied to the spindle 1.

25 In the applied position, a rotation of the hub will cause movement of the cords 4 from the deep track 2 to the low track 3, which means that the cords 4 are pressed to engage the internal side of the hub 6, as shown in fig. 5, and the coupling is thereby engaged.

The parts are thus coupled together, and the tool 7 may be driven precisely in the direction of the arrow 8, since it is centered by the cords 4.

30

In case of change, the rotation is stopped, and the tool 7 with the hub 6

may be moved a small distance against the direction of rotation, whereby the cords 4 will be moved back into the deep grooves 2, whereby the pressure against the hub 6 ceases. Then, the hub may easily be replaced by another one, following which the engagement may take place as described above.

Where transfer of great torques or large dimensions are involved, more than the described three sets of grooves 2 and 3 may be provided.

Claims:

1. A coupling comprising a driving shaft or spindle which is capable of engaging a surrounding driven hub, said shaft or spindle (1) being configured with three or more longitudinal sets of grooves or tracks (2 and 3) shaped to receive an extending cord (4), said grooves or tracks (2 and 3) having two depths so that the extending cord (4) is receivable either in the deep track (2) or in the low track (3), whereby there is no or slightly driving or firmly driving contact, respectively, with the hub (6), c h a r a c t e r i z e d in that the cord (4) is made of an elastic material.
2. A coupling according to claim 1, c h a r a c t e r i z e d in that the grooves or tracks (2 and 3) each have curved bottoms, and that the cord (4) has a correspondingly round cross-sectional shape.
3. A coupling according to claims 1 – 2, c h a r a c t e r i z e d in that the cord (4) extends in the tracks (2 and 3) from a bore or an opening (10) through the shaft or spindle (1) at each end of the tracks (2 and 3).
4. A coupling according to claim 3, c h a r a c t e r i z e d in that the bore or opening (10) extends in its respective end of the low track (3).
5. A coupling according to claims 3 - 4, c h a r a c t e r i z e d in that the cord (4) is secured to the shaft or spindle (1) by means of a bead, a clamping ring (5) or a similar attachment device on the inner side of the opening (10) in the shaft or spindle (1).

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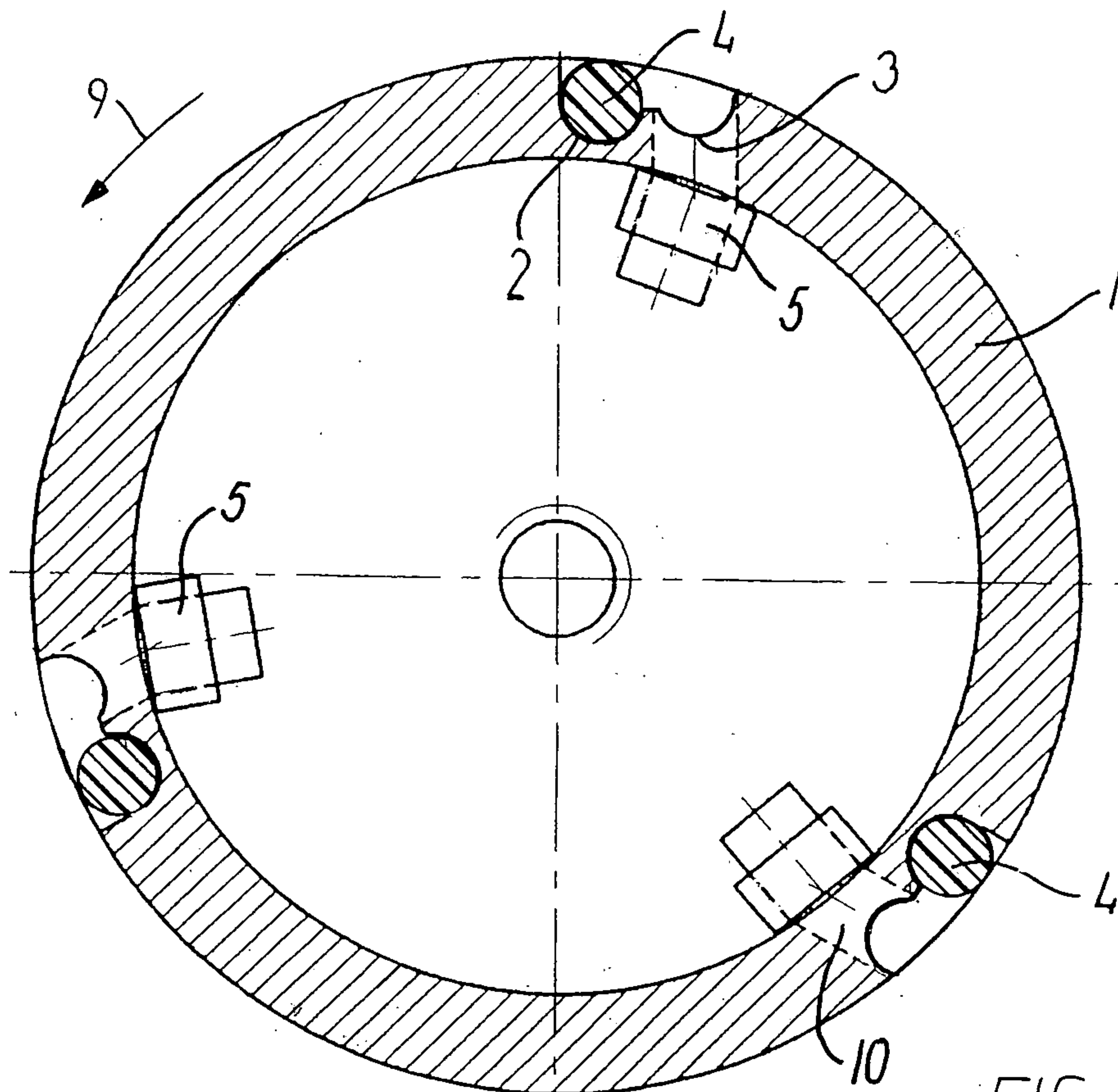


FIG. 1

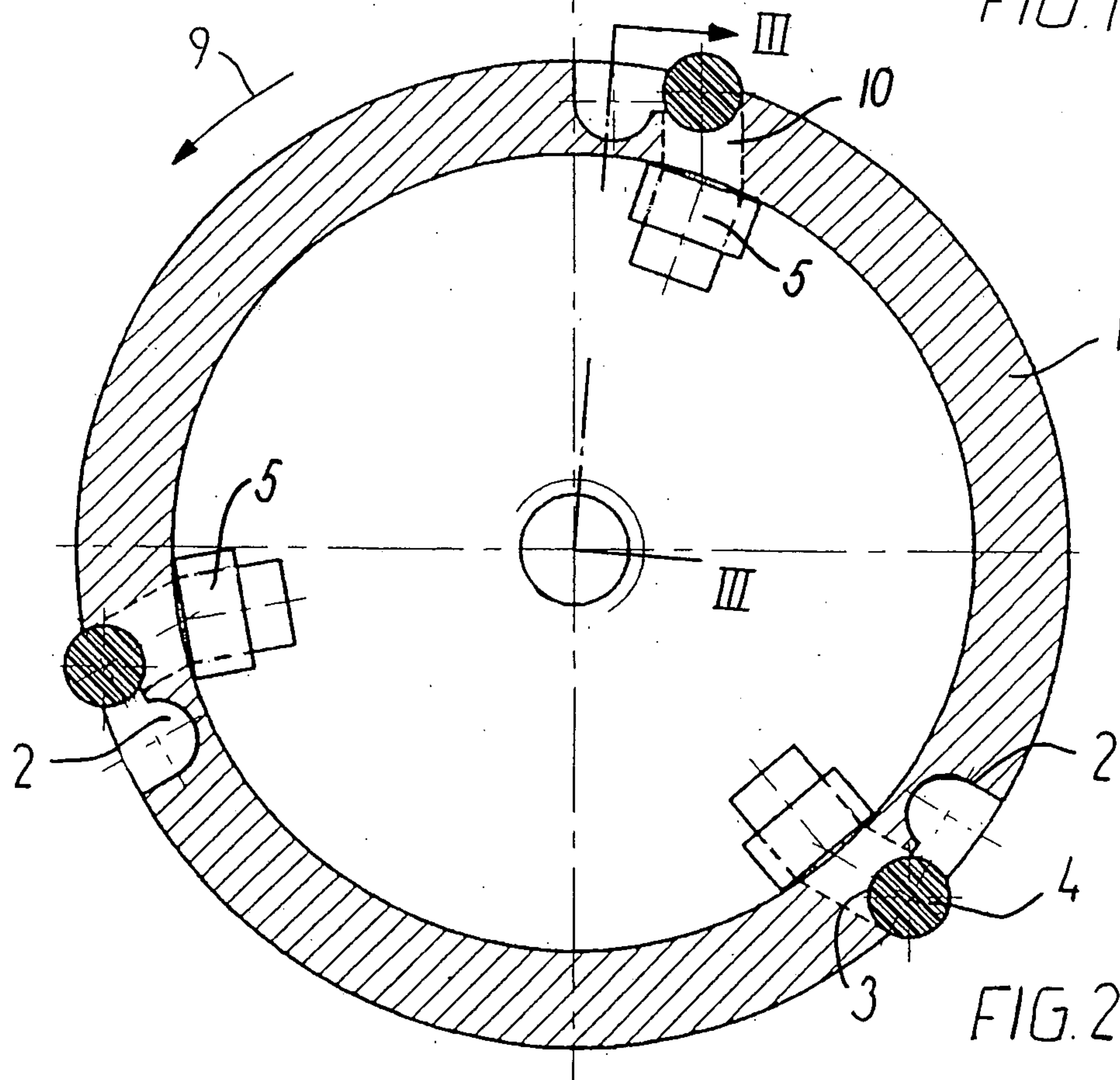


FIG. 2

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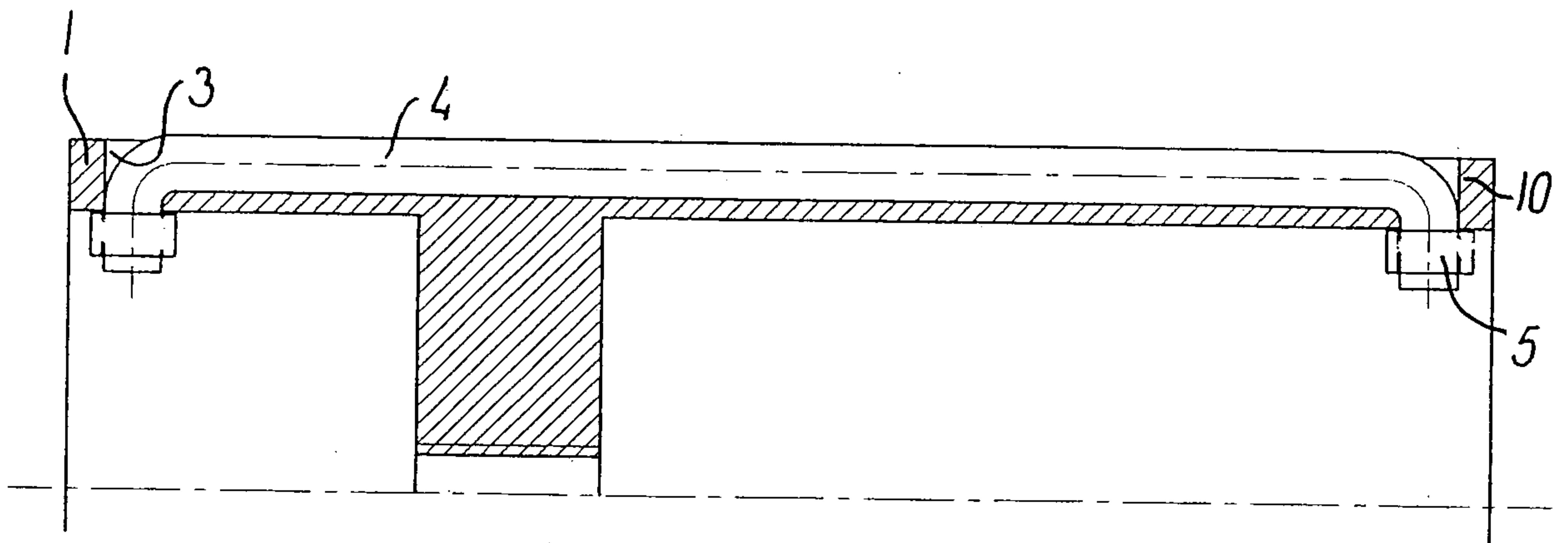


FIG.3

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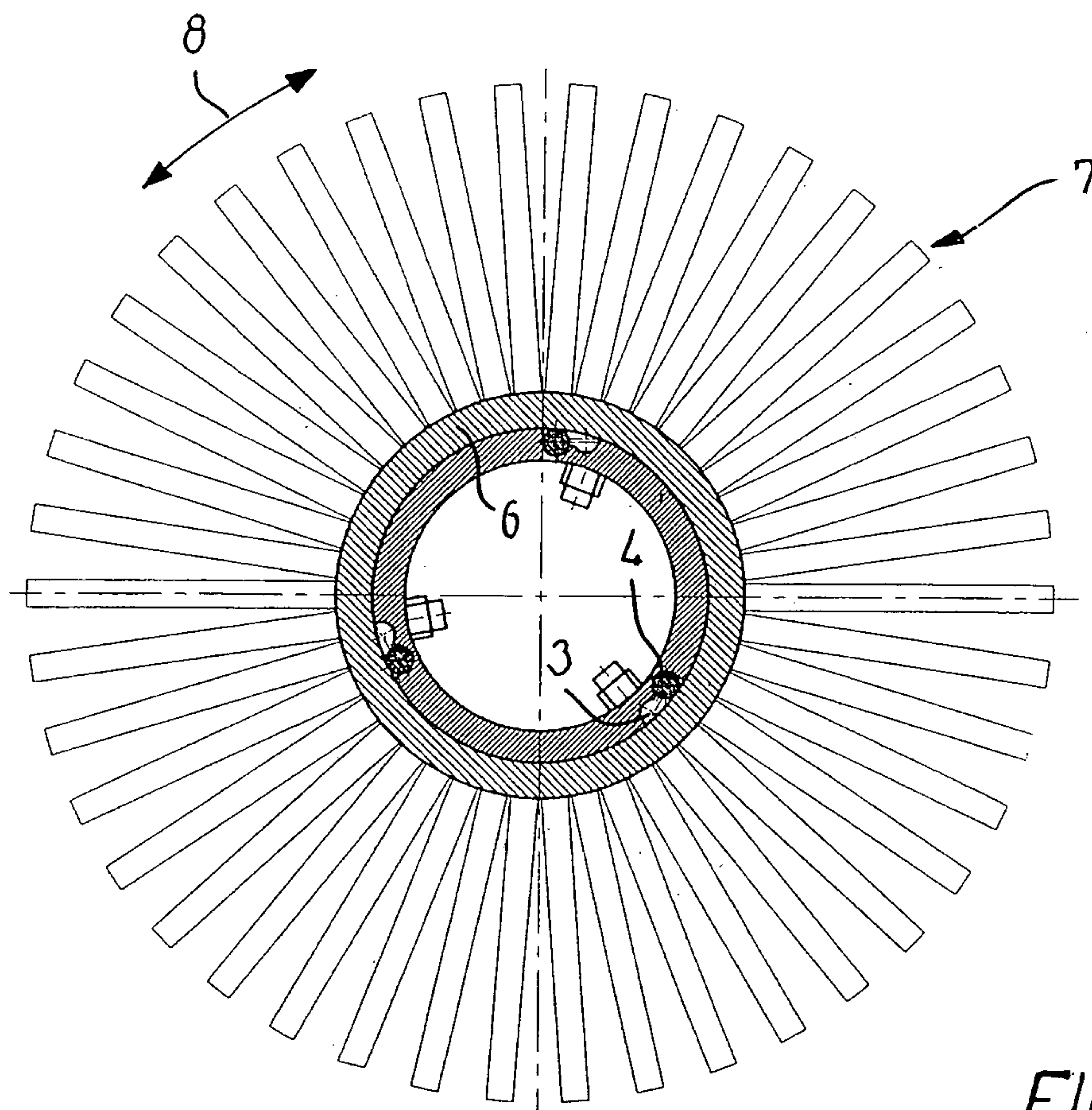


FIG. 4

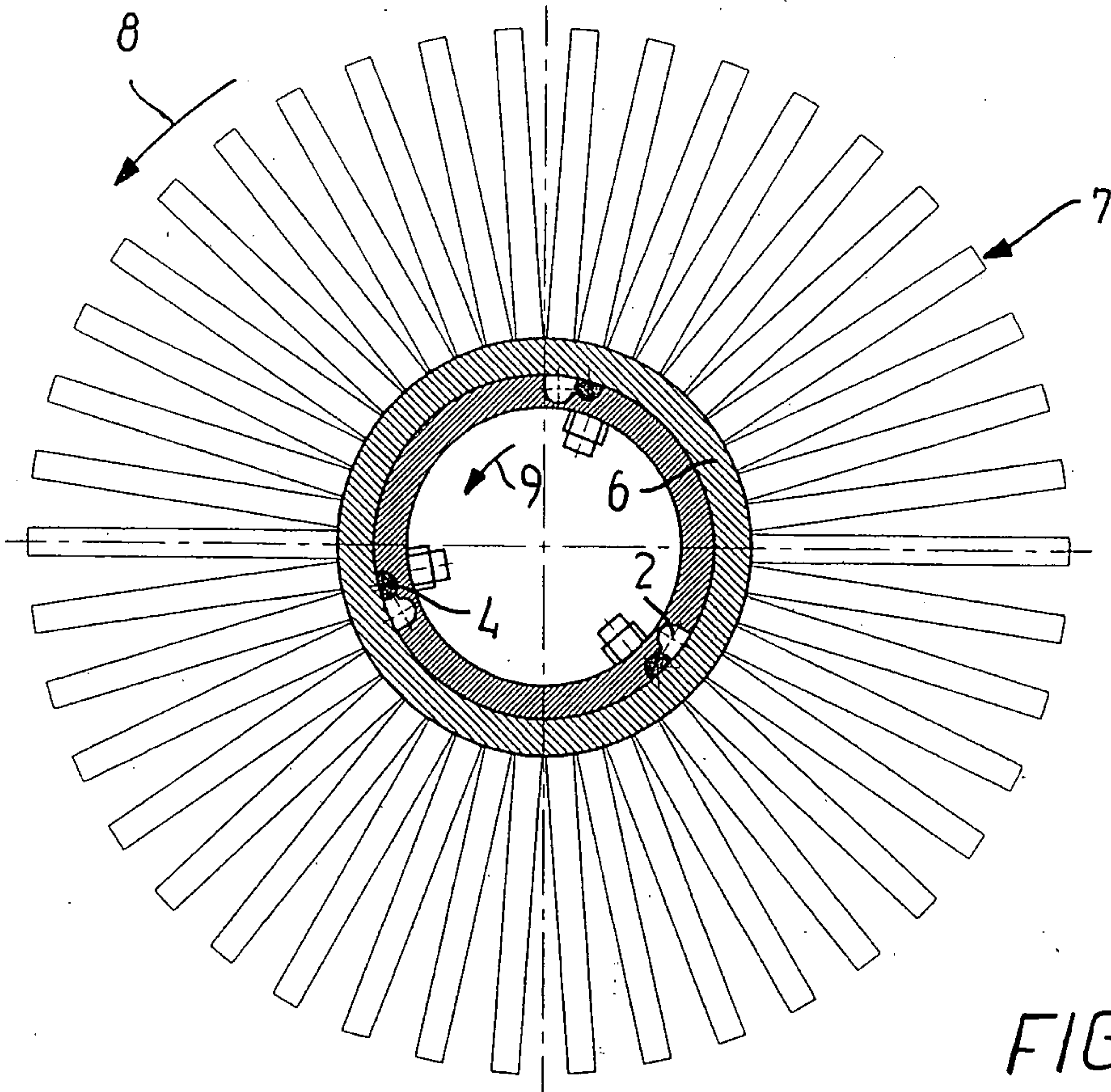


FIG. 5

